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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/820,120	04/08/2004	Yoshikazu Miyajima	03560.003451	8660

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EXAMINER

GUTIERREZ, KEVIN C

ART UNIT	PAPER NUMBER
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2851

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/820,120

Applicant(s)

MIYAJIMA ET AL.

Examiner

Kevin Gutierrez

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9, 10, 16, 17 and 22-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9, 10, 16, 17 and 22-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed January 5, 2007 have been fully considered but they are not persuasive.

Regarding the Remarks on pages 6-9, the Applicant states Hara and Emoto are not understood to disclose or suggest a cooling unit which includes a cooling pipe provided in a moving unit through which coolant flows to cool a coil unit in the moving unit and provided coolant flow that cools a gas used by a gas bearing, which supports the moving unit and has a supply pipe through which the gas flows, at least a portion of which is disposed adjacent to or is surrounded by said cooling pipe and a cooling unit that includes a cooling pipe disposed between first and second moving units, where a coolant flow through the cooling pipe absorbs a heat transmission from a coil unit, in the first moving unit, to the second moving unit. The Examiner respectfully disagrees. Hara discloses a cooling pipe (203; centralized piping) in the moving unit (106, 111A-111B, 65 75B) through which coolant flow that cools a gas used by a gas bearing ([0082], lines 14-17, where gas bearing utilizes temperature-controlled air, which is the coolant flow used), which supports the moving unit and has a supply pipe (203A-203B; branch pipes) through which the gas flows, at least a portion of which is disposed adjacent to or is surrounded by said cooling pipe (see fig. 6, where gas flows through centralizing piping 203, which is adjacent to branch pipes 203A-203B). Further the cooling pipe disclosed through which the air in the pipe is temperature controlled ([0081], lines 6-8), which is disposed between the first (63, 64

comprise of 105 and 101) and second moving unit (68A comprise of 75A-75B, where the piping of 203 is embedded within the moving units. Thus, it is interpreted as the cooling pipe disposed between the first and second moving units).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 9, 10, 16-17, 21-22 and 24-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Hara (US 2002/0015139).

Regarding claim 16, Hara discloses "a stage apparatus comprising:

- base plate (fig. 4, 61; surface plate);
- a moving unit (106, 111A-B, 65, 75B) moveable along a surface of said base plate ([0074], lines 1-4);
- a linear motor (fig. 4 - 68A) which drives said moving unit [0074], lines 1-4, where 2 linear motors are disclosed, but only one is shown) and includes a coil unit (75A-B) in said moving unit (106, 111A-B, 65, 75B)."
- a gas bearing which supports said moving unit on the base plate ([0075], lines 1-6); and

- a cooling unit includes a cooling pipe which (203; centralized piping) is provided in said moving unit through which a coolant flows to cool said coil unit ([0082], lines 14-17),

- wherein said cooling pipe provides coolant flow that cools a gas used by gas bearing ([0090], lines 18-22, where temperature controlled air is supplied to the gas bearings);

- wherein said gas bearing has a supply pipe (203A-203B; branch pipes) through which the gas flows ([0081], lines 4-6), wherein at least a portion of said supply pipe is disposed adjacent to or is surrounded by said cooling pipe (see fig. 6, where branch pipes 203A-203B are adjacent to centralized piping 203)."

Regarding claim 9, Hara discloses "wherein said cooling pipe is disposed near an outer periphery of said moving unit (where the centralized piping 203 is located near the periphery of moving unit (101); [0081], lines 7-8, and to branch pipes 203A, 203B; see Fig. 6)."

Regarding claim 10, Hara discloses "further comprising a laser interferometer (76, 77) from measuring the position of said moving unit ([0075], lines 7-9, where coordinates are used for positioning of stage unit)."

Regarding claim 17, Hara discloses "wherein said cooling unit is disposed between said coil unit and a substrate (80; wafer) mounted on said moving unit (where the cooling unit is installed in the centralized piping 203 [0081], lines 7-8, and to branch pipes 203A, 203B; see Fig. 6)."

Regarding claim 21, Hara discloses “wherein said moving unit comprises a fine-motion actuator which moves a substrate (80) mounted on said moving unit ([0076], lines 10-14), and said cooling unit is disposed between said cooling pipe and said fine-motion actuator (where centralized piping 203 is branched out throughout moving unit; [0081], lines 7-8, and to branch pipes 203A, 203B; see Fig. 6).”

Regarding claim 22, Hara disclose the limitations set forth in claim 16 and further discloses a base plate (61);

- “a first moving unit (63, 64 comprise of 105 and 101) movable along a surface of said base plate (61);
- a linear motor (63, 64) which drives said first moving unit and includes a coil unit (64A-B) in said first moving unit;
- a second moving unit (68A comprise of 75A-B) which moves with respect to said first moving unit; and
- a cooling unit including a cooling pipe disposed between said first and second moving units, wherein a coolant flow through said cooling pipe absorbs a heat transmission from said coil unit to said second moving unit (where the cooling pipe 203 is branched through branch pipes 203A, 203B and embedded in the moving units, where the air is provided by compressed source and temperature-controlled and exhausted throughout. Thus, it is interpreted as the cooling pipe disposed between first and second moving units).”

Regarding claims 24-25, Hara discloses “wherein the linear motor is a surface motor (where linear motors 64, 63, 68A are moved over surface 61).”

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hara in view of Emoto (US 2001/0001248).

Hara discloses a cooling pipe, but does not disclose "a direction in which the coolant flows is opposite to that in which the gas flows through said supply pipe."

However, having a direction in which the coolant flows is opposite to that in which the gas flows through the supply pipe is known to the art as it is evident by the teaching of Emoto (fig. 1A, where the cooling means circulates a cooling media 3a-3c which flows in opposite vertical directions (indicated by arrows)). Thus, it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the cooling unit of Hara by having coolant flowing in an opposite direction of the gas flow with a supply pipe between the circulating cooling media. The ordinary artisan would have been motivated to modify the cooling unit of Hara in a manner described above for at least the purpose to promote the cooling of the gas.

6. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hara.

Hara discloses the claimed invention except for "wherein second moving unit

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moves within a range smaller than that of first moving unit.” It would have been obvious to one having ordinary skill in the art at the time the invention was made to have “wherein second moving unit moves within a range smaller than that of first moving unit,” since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum and workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Gutierrez whose telephone number is (571)-272-5922. The examiner can normally be reached on Monday-Friday: 8:00 a.m. - 5:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571)-272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Kevin Gutierrez
Examiner
Art Unit 2851

March 27, 2007

William Perkey
Primary Examiner